REMARKS

The description has been amended to correct a minor informality.

Allowable claims 7, 12, 18-20, 23, 24, and 26-28 have been rewritten in independent form. Claims 1-6, 9-11, 14-17, 21 and 22 are submitted for reconsideration in the light of the following remarks and authorities. New claims 31-34 have been added dependent on claim 14 to define features of the invention.

The objection to the declaration is noted. A new declaration will be filed in due course.

The objection to the drawings is noted. We enclose a copy of FIG. 8A described in the paragraph spanning pages 11-12 of the specification.

Claims 1-6, 9-11, 14-17, 21 and 22 stand rejected under 35 U.S.C. §102(b) as anticipated by Inagaki. Regarding claim 1, the reference is said to disclose a method for spatially modulating radiation, with specific reference to the abstract and FIG. 3 comprising, directing at least one radiation beam, with specific reference to column 5, lines 51-53 and column 7, lines 31-41, FIG. 3, L, upon at least one surface acoustic wave diffractive element, with specific reference to column 7, lines 33-36, FIG. 3, 38, and driving at least one of said surface acoustic diffractive elements with a plurality of modulating signals, with specific reference to column 7, line 55 - column 8, line 14, FIG. 3, 37, to generate a plurality of independently modulated output radiation beams having parameters, with specific reference to column 7, line 55 - column 8, line 14, FIG. 3, L1, L2, and L3.

Regarding claim 2, the reference is said to further disclose the modulating signals being electrical, with specific reference to column 7, lines 55-56, FIG. 3, 37.

Regarding claim 3, the reference is said to disclose the driving comprising modulating at least one output radiation beam parameter selected from the group consisting of the direction, with specific reference to column 7, lines 36-41, FIG. 3, the amplitude, phase and frequency of the modulated output radiation beams.

Regarding claim 4, the reference is said to disclose the driving comprising the application of a plurality of separate modulating signals for each surface acoustic wave diffractive element, with specific reference to column 7, lines 55-57.

Regarding claim 5, the reference is said to disclose at least one of the modulating signals being characterized by a plurality of frequencies, with specific reference to column 7, lines 55-57.

Regarding claim 6, the reference is said to disclose a laser directing the radiation beam, with specific reference to column 5, lines 51-53 and column 7, lines 31-41.

Regarding claim 9, the reference is said to disclose the modulated output radiation beams directed upon photosensitive material, with specific reference to column 9, lines 39-54, FIG. 5, 8.

Regarding claim 10, the reference is said to disclose an apparatus for spatially modulating radiation, with specific reference to the abstract, FIG. 3, comprising, at least one surface acoustic wave diffractive element, with specific reference to FIG. 3, 33, each element it is said inherently having a surface, at least one transducer of surface acoustic waves, with specific reference to column 7, line 57, FIG. 3, 33, a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of the surface acoustic wave diffractive elements, with specific reference to column 7, lines 24-30 and line 55, column 8, line 14, FIG. 3, 37, a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element, with specific reference to column 7, lines 31-41, FIG. 3, L and a plurality of modulated output radiation beams modulated by respective ones of the modulating signals, with specific reference to column 7, lines 43-59, FIG. 3, L1, L2 and L3.

Regarding claim 11, the reference is said to disclose the source of radiation beam 8 laser, with specific reference to column 7, lines 31-33, which it is said would inherently have a cavity.

Regarding claim 14, the reference is said to disclose at least one surface acoustic wave diffractive element having an active area, with specific reference to column 7, lines 24-30, FIG. 1, 32.

Regarding claim 15, the reference is said to disclose the active area being piezoelectric, with specific reference to column 6, line 66 - column 7, line 8, FIG. 8, 32.

Regarding claim 16, the active area of the reference it is said would inherently have a reflectivity greater than zero, this it is said being reasonably based upon the reference disclosing the input laser beam being deflected, with specific reference to column 7, lines 31-41.

Regarding claim 17, the active area of the reference it is said would inherently have a transmissivity greater than zero, this it is said being reasonably based upon the indicated piezoelectric materials column 7, line 7, having well-known transmissive characteristics as well as the reference disclosing the transmitted beam Lo, with specific reference to FIG. 3.

Regarding claims 21 and 22, the reference is said to disclose the transducer comprising interdigital electrodes, with specific reference to column 7, lines 9-13, FIG. 3, 33, deposited on top of a piezoelectric substrate, with specific reference to column 6, line 66 - column 7, line 8, FIG. 1, 32, and being regularly spaced, with specific reference to FIG. 3, 33.

These grounds of rejection are respectfully traversed.

"It is well settled that anticipation under 35 U.S.C. 102 requires the presence in a single reference of all of the elements of a claimed invention." *Ex parte Chopra*, 229 U.S.P.Q. 230, 231 (BPA&I 1985) and cases cited.

"Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983).

"This court has repeatedly stated that the defense of lack of novelty (i.e., 'anticipation') can only be established by a single prior art reference which discloses each and every element of the claimed invention." *Structural Rubber Prod. Co. v. Park Rubber Co.*, 223 U.S.P.Q. 1264, 1270 (Fed. Cir. 1984), citing five prior Federal Circuit decisions since 1983 including *Connell.*

In a later analogous case the Court of Appeals for the Federal Circuit again applied this rule in reversing a denial of a motion for judgment n.o.v. after a jury finding that claims were anticipated. *Jamesbury Corp. v. Litton Industrial Prod., Inc.*, 225 U.S.P.Q. 253 (Fed. Cir. 1985).

After quoting from *Connell*, "Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim," 225 U.S.P.Q. at 256, the court observed that the patentee accomplished a constant tight contact in a ball valve by a lip on the seal or ring which interferes with the placement of the ball. The lip protruded into the area where the ball will be placed and was thus deflected after the ball was assembled into the valve. Because of this constant pressure, the patented valve was described as providing a particularly good seal when regulating a low pressure stream. The court quoted with approval

from a 1967 Court of Claims decision adopting the opinion of then Commissioner and later Judge Donald E. Lane:

> [T]he term "engaging the ball" recited in claims 7 and 8 means that the lip contacts the ball with sufficient force to provide a fluid tight seal. *** The Saunders flange or lip only sealingly engages the ball 1 on the upstream side when the fluid pressure forces the lip against the ball and never sealingly engages the ball on the downstream side because there is no fluid pressure there to force the lip against the ball. The Saunders sealing ring provides a compression type of seal which depends upon the ball pressing into the material of the ring. *** The seal of Saunders depends primarily on the contact between the ball and the body of the sealing ring, and the flange or lip sealingly contacts the ball on the upstream side when the fluid pressure increases. 225 U.S.P.Q. at 258.

Relying on *Jamesbury*, the ITC said, "Anticipation requires looking at a reference, and comparing the disclosure of the reference with the claims of the patent in suit. A claimed device is anticipated if a single prior art reference discloses all the elements of the claimed invention as arranged in the claim." *In re Certain Floppy Disk Drives and Components Thereof*, 227 U.S.P.Q. 982, 985 (U.S. ITC 1985).

Claims 1-6 and 9 call for directing at least one radiation beam upon at least one surface acoustic wave diffractive element. The reference does not disclose directing at least one radiation beam upon at least one surface acoustic wave diffractive element. The reference discloses using an optical waveguide with surface acoustic waves propagating on the optical waveguide. The reference discloses surface waves generating a diffraction grating through Bragg diffraction as disclosed in column 7, lines 30-40.

The invention disclosed and claimed in claim 1 and the claims dependent upon claim 1 call for a process that is different from that described in the reference by calling for having the at least one beam directed upon the surface acoustic wave diffractive element as distinguished from into the diffractive element as disclosed in the reference.

Nor does the reference disclose each and every element set forth in claim 10 and claims 14-17, 21 and 22 dependent thereon, at least because these claims call for a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element as called for by all these claims.

Accordingly, withdrawal of the rejection of claims 1-6, 9-11, 14-17, 21 and 22 as anticipated by the reference is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the reference regarded as corresponding to directing at least one radiation beam upon at least one surface acoustic wave diffractive element as called for by claims 1-6 and 9 and a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element as called for by claims 10, 11, 14-17, 21 and 22.

New claims 31-34 dependent upon claim 14 have been added to define features of the invention and are submitted to be allowable in this application.

The courtesy of the Examiner in deleting on page 15, last line "10, spatially modulating radiation comprising:" setting forth his comments on allowable subject matter and conducting a diligent search is acknowledged with appreciation.

The references cited, but not applied, have been examined, and are submitted to be incapable of anticipating, suggesting or making obvious the subject matter as a whole of the invention disclosed and claimed in this application.

In view of the foregoing authorities, remarks and the inability of the prior art to anticipate, suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, all the claims are submitted to be in a condition for allowance upon overcoming the formal objections raised in the office action, and notice thereof is respectfully requested. Should the Examiner believe the claims are not in a condition for allowance, he is respectfully requested to telephone the undersigned attorney at (617) 521-7014 to discuss what additional steps he believes are necessary to place the claims in a condition for allowance.

Attached is a marked-up version of the changes being made by the current amendment.

Applicants enclose a check in the amount of $36 for excess claim fees, as well as a Petition for One-Month Extension of Time, together with a check in the amount of $55. The Commissioner is respectfully requested to apply any other charges or credits to Deposit Account No. 06-1050, Order No. 12325-002001.

Respectfully submitted,

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Version with markings to show changes made

In the description:

At the bottom of page 15, please delete: --10. Apparatus for spatially modulating radiation comprising: --.

In the claims:

Claims 7, 12, 19-20, 23, 24, 26-28, and 30 have been amended as follows:

7. (Amended) [The method of claim 1 wherein the radiation beam directing is with a pulsed radiation beam] A method for spatially modulating radiation comprising:

directing at least one radiation beam upon at least one surface acoustic wave diffractive element;

and driving at least one of said surface acoustic diffractive elements with a plurality of modulating signals to generate a plurality of modulated output radiation beams having parameters,

wherein the radiation beam directing is with a pulsed radiation beam.

12. (Amended) [The apparatus of claim 11 wherein the surface acoustic wave diffractive elements are positioned inside the laser cavity so as to direct the output radiation beams out of the laser cavity] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein the source of radiation is a laser having a cavity,

wherein the surface acoustic wave diffractive elements are positioned inside the laser cavity so as to direct the output radiation beams out of the laser cavity.

18. (Amended) [The apparatus of claim 14 wherein the active area is patterned] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

wherein the active area is patterned.

19. (Amended.) [The apparatus of claim 14 wherein said active area is on a curved surface] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

wherein said active area is on a curved surface.

20. (Amended.) [The apparatus of claim 14 wherein said active area comprises multiple regions with different material] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said active area comprises multiple regions with different materials.

23. (Amended.) [The apparatus of claim 21 wherein the interdigital electrodes are irregularly spaced] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

wherein the transducer comprises interdigital electrodes deposited on top of a piece of electric substrate,

wherein the interdigital electrodes are irregularly spaced.

24. (Amended.) [The apparatus of claim 10 wherein the at least one surface acoustic wave diffractive element includes at least one transducer to create surface acoustic waves in a plurality of adjacent active areas, the plurality of adjacent active areas being situated so as to receive portions of the source of beam of radiation and wherein] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein the transducer is used to generate surface acoustic waves in the plurality of active areas.

26. (Amended.) [The apparatus of claim 14] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising a second transducer, the at least one transducer being electrically connected to said second transducer.

27. (Amended.) [The apparatus of claim 14] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising at least one second transducer constructed and arranged to transduce acoustic energy into electrical energy.

28. (Amended.) [The apparatus of claim 14] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising a second surface acoustic wave diffractive element wherein the at least one surface acoustic wave diffractive element is located on the same substrate as the second surface acoustic wave diffractive element.

30. (Amended.) [The apparatus of claim 10] Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein the source of modulating signals provides radio frequency electrical signals.